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APR 0 1 1999

Mr. James A. Saric, Remedial Project Manager
U.S. Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE- 0606-99

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF DRAFT FINAL REMEDIAL ACTION DOCUMENT PACKAGE FOR OPERABLE UNIT 1 AND RESPONSES TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS

This letter transmits the Draft Final Remedial Action (RA) Document and the responses to the U.S. Environmental Protection Agency (U.S. EPA) and Ohio Environmental Protection Agency (OEPA) comments received by letters of November 24, 1998, and February 11, 1999. These responses to comments, and the subsequent revisions to the RA Document are reflective of discussions between Department of Energy (DOE), Fluor Daniel Fernald, Inc. (FDF), IT, and representatives of the U.S. EPA and OEPA during a meeting in Dayton, Ohio on Thursday, February 25, 1999.

Please contact Dave Lojek at (513) 648-3127 if you have any questions or comments.

Sincerely,

Johnny Reising

FEMP:Lojek

Johnny W. Reising
Fernald Remedial Action
Project Manager

Enclosure

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cc w/enclosure:
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T. Walsh, FDF/65-2
ECDC, FDF/52-7

Ohio Environmental Protection Agency Comments on the Draft Waste Pits Remedial Action Project Remedial Action Package

General Comments

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: N/A Page #: N/A Line #: N/A Code: general
Original Comment #: 1

Comment: During the Remedial Design document review, a series of meetings were held between DOE, OEPA, FDF, and IT, concerning the ambient monitoring of radionuclides. While agreement was reached regarding particulate radionuclide monitoring, ambient radon monitoring was agreed to be addressed in the RAP. The RAP does not include any provisions for ambient radon monitoring. Please include in following submittals.

Response: It is DOE's understanding that the ambient radon monitors referred to in the comment are the occupational monitors (i.e., Pylon monitors) that are planned for the project. The plans for these monitors were discussed in DOE's response to Ohio EPA Original Comment #8 on the Draft Final Remedial Design Package. In that response, DOE stated that it would work with the regulators concerning the locations of these monitors. DOE is still committed to seeking EPA input on this issue; however, plans have not yet been developed for the placement of these monitors. Once plans are developed, DOE will share them with the EPAs. Occupational radon monitoring plans are not required as part of the Remedial Action Package.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: N/A Page #: N/A Line #: N/A Code: general
Original Comment #: 2

Comment: It has recently come to Ohio EPA's attention that EnviroCare's permit has just been renewed and that the permit was changed significantly enough to affect several of the elements in this Package. We expect that the blending strategy to achieve compliance with isotope-specific activity limits will be changed completely. The changes to the blending plan will also affect the excavation strategy.

Similarly, changes to the permit also include very onerous consequences if characteristic hazardous wastes are discovered by the sampling to be carried out at the PCDF.

Our comments are being submitted under the assumption that all three (blending plan, excavation plan and sampling plan) strategies will be substantially re-written.

Response: The Envirocare License was amended to incorporate two basic changes:

1. The license was revised to include an increase in the average concentration per container on receipt, of plutonium-239, plutonium-241, and uranium-235.; and
2. The text was revised to restrict the average concentration to a "container" where previously, it was averaged over a "conveyance." The underlined text in No. 1 appears in the revised license.

The revisions in No. 1, which increase the allowable average concentration of three isotopes, did not change the excavation or blending strategy. In addition to meeting Envirocare acceptance criteria, the shipments must also meet DOT LSA-I criteria. The limits for LSA-I are, in many regards, quite close to the previous Envirocare acceptance limits. Hence, the excavation and blending plans have remained unaltered. The increase in acceptable activity levels tend, however, to add additional margin of safety to compliance.

The revision in No. 2 changed the basis of compliance. Whereas Envirocare previously looked at averaging over an entire conveyance (including a trainload), the new permit focuses on each container. The major concern of the revision was over the possibility of a single grab sample from a railcar causing non-compliance. Envirocare's sampling strategy includes compositing 6 to 12 samples from selected railcars to determine compliance with their permit. This is an extremely important point in that their data will rapidly approach the mean value for the railcar and will be quite insensitive to single outliers. Hence, the issue for the FEMP becomes controlling and verifying the mean values being loaded into railcars. Distributions are far less important than was originally believed.

IT's process is based on deliberately excavating and blending to achieve a designed mean value for critical parameters such as Th230 and U235 ratios. In the process of excavating, blending, loading of the bins, and unloading of the bins into railcars, the waste material is mixed several times. In many cases, (e.g., excavation) the process cuts across the natural stratification and significantly improves homogeneity. Hence, there are non-random processes designed to make distributions more uniform. The result will be what Dr. Pierre Gy calls "hyperhomogeneity" (see Sampling for Analytical Purposes, John Wiley and Sons, Page 81). This is where the mean of a lot is well behaved due to deliberate and purposeful blending, even though the fundamental distribution may still be quite variable.

Once the bin has been created by purposeful blending and the mean verified by a well composited sample, the material in the bin will be split into six nearly equal portions (i.e., six railcars). These splits are very unlikely to have means that differ significantly from each other or from the average value of the material that made up the bin. It is the mean of the railcar that Envirocare is measuring and this should not vary significantly from the mean of the bin from which the railcar was loaded. In other words, by using a large number of composites in their sampling plan, the Envirocare approach makes it very unlikely that single "hot spots" will create a problem. This approach has been discussed with Envirocare and they have expressed no objections.

In reviewing these changes, it became clear that the average values for key parameters were crucial to success. Hence, as a result of the changes to the Envirocare permit, it appears prudent to increase the number of increments taken to form the composite. This will insure that the mean values of key parameters will be well known.

Action: The SAP has been revised to include a sampling strategy that is consistent and ensures compliance with the Envirocare sampling program and WAC, and includes the strategy discussed above.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: N/A Page #: N/A Line #: N/A Code: general
Original Comment #: 3

Comment: Ohio EPA understands DOE is currently evaluating information regarding potential listed hazardous waste in the Waste Pit Area. A final conclusion on this matter and incorporation of any decision into the Remedial Action Package is necessary before the document can be approved by the Ohio EPA.

Response: As you know, from verbal briefings on the topic, Fluor Daniel Fernald (FDF) has conducted an extensive reevaluation of historical information relating to waste disposal in the Operational Unit 1 Waste Pits. The purpose of the review was to ensure that previous determinations concerning the RCRA status of the pits remain appropriate. The DOE requested that FDF present in a report, without regulatory conclusions, the information resulting from the referenced reevaluation along with associated uncertainties. DOE's conclusions and position regarding the regulatory status of the OU1 waste pits is presented in the attached letter from DOE to FDF. The letter also presents background on the reevaluation and identifies the seven principal areas of review by FDF along with DOE's position on the conclusions of each area of review.

In summary, the DOE has concluded that the hazardous waste determinations made previously for the waste pits remain accurate. It is the DOE's position that the HWMU's, SWMU's, and hazardous wastes and constituents that were reported in the FEMP's permit application as well as the OU1 RI/FS and ROD remain accurate.

It should be noted that FDF's review did identify one instance of disposal of what could be a listed solvent (NEC solvent - see attached letter), most likely within a trench excavated into environmental media in the burn pit area. While uncertainties exist concerning the disposal of this solvent, as implied within the attached letter, it is DOE's intent to conservatively attempt to isolate and manage, if identifiable as such, any environmental media affected by the disposal. Due to the extremely localized nature of the disposal area within environmental media, this strategy is expected to have no substantive impact on implementation of remedial action as described in the RA package.

Action: No action required for this RA Package. Prior to excavation in the Burn Pit area, DOE will prepare and implement a plan, subject to the Agencies' approval, that will use analytical methods to attempt to identify the presence within environmental media of NEC solvent constituents above to be established health based levels. If identified, the plan will provide for the segregation of this implicated media and management as a RCRA listed waste.

Overview of Package

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.0 Page #: 2 Line #: 22 Code: E
Original Comment #: 4
Comment: Change "Continency" to "Contingency".

Response: Text will be revised.

Action: Text has been revised.

O&M Plan

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3.3.1 Page #: 20 Line #: 27-31 Code: C
Original Comment #: 5
Comment: Will the CAM be connected to the PLC? If yes, what will the PLC response be for elevated radionuclide emission from the stack ? What are the alarm levels for beta/gamma and radon? (A table could be used to answer these questions.)

Response: The gas cleaning system stack CAM is connected to the process PLC. Elevated beta/gamma and/or radon will initiate an alarm in the control room. Elevated beta/gamma could indicate a problem with the HEPA filtration system (as is stated in the text), in which case waste feed to the rotary dryer would be suspended and appropriate corrective actions will be undertaken until the condition is resolved. Elevated radon would indicate that the pit waste being fed to the rotary dryers contains significant radon producing compounds, in which case the waste feed material blend would be evaluated to determine possible blend modifications to reduce radon stack emissions.

Alarm levels will be typically as follows:

High Beta/Gamma alarm at 100 cpm above background
High Radon alarm at 0.013 Ci/hr

Action: The O&M Plan has been revised to indicate what the response will generally be to the indicated alarms.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix III Page #: 10 of 11 Line #: N/A Code: C
Original Comment #: 6
Comment: Table 7-1b under "Compliance Strategy" paragraph 2, states that residual contaminated soils from OU1 may be placed into the OSDF. This seems to contradict the plan ship all waste pit material to a CDF.

Response: All waste pit material will be shipped to Envirocare for disposal. Consistent with the OU1 ROD, however, soils from within the OU1 boundary (i.e., soils around and/or below the pits) are not part of the waste pits themselves, and may be dispositioned in a couple of ways depending on the contamination levels. If contamination levels are above the OSDF WAC, the soils will be managed consistent with the management of the waste materials (i.e., the soils will be processed and shipped to Envirocare for disposal). However, if the contamination levels of the soils are such that the soils meet the OSDF WAC, the soils will be disposed of in the OSDF.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 7.1c Page #: 2 of 8 Line #: N/A Code: c
Original Comment #: 7
Comment: (OAC) 3745-17-07(B) and 3745-17-8(B) have been incorrectly cited as the governing regulations for the particulate emissions from paved roads, unpaved roads and material storage piles. OAC 3745-17-07 is applicable to "old" sources that were in existence prior to February 15, 1972. OAC 3745-31-05(A) (cited on page 6 of 8) requires that new sources of emission employ the best available technology (BAT). The BAT determination is made on a case-by-case basis. However, activities such as controlling fugitive dusts from paved and unpaved roads and stockpiles have time and again resulted in standards that are more stringent than the standards cited in OAC 3745-17-07. In other words, BAT requires that more stringent controls be employed than the controls required by "reasonably available control measures" (RACM). The following examples have been taken from the Administrative Code for activities similar to those proposed in this Work Plan.

paved roadways	OAC 3745-17-12(F)(2)	1 min. exceedence in any 60-min. period
unpaved roadways	3745-17-12(F)(1)	3 min. exceedence in any 60-min. period
material storage piles	3745-17-12(C)(2)	1 min. exceedence in any 60-min. period

The Ohio EPA has consistently maintained the position that the remedial activities at the FEMP should employ BAT and ALARA goals whenever feasible. Because the emissions of concern are from a Superfund action and the methods to comply with BAT do not require expensive, innovative or burdensome requirements, the Ohio EPA will not entertain any less stringent standards than those that apply to quarrying operations.

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Rewrite the Table omitting the references to OAC 3745-17-07 and 3745-17-08(B) and RACM. The Requirements Assessment and the Compliance Strategy outlined in the table are consistent with BAT with some exceptions such as the omission of several practical and implementable measures such as sweeping the roads and minimizing the drop height from loaders and excavators. The revised Table should be consistent with the FEMP Sitewide Dust Control Policy.

Response: Comment acknowledged. The WPRAP will comply with the FEMP Sitewide Dust Control Policy, which reflects the approved BAT for control of fugitive dust. Specifically, the project, as a new source, shall meet BAT for controlling fugitive dust, pursuant to OAC 3745-31-05(A)(3). In addition, the FEMP Sitewide Dust Control Policy requires that during material handling/vehicle traffic on storage piles, visible particulate emissions shall not exceed 20% opacity as a 3 minute average. Visible particulate emissions caused by wind erosion from storage piles shall not exceed 3 minutes during any 60 minute observation period.

The compliance strategy was intended to provide a summary of the strategy that will be implemented to address the referenced requirement; it was not intended to be all inclusive. Locations for additional detail pertaining to compliance with the requirement are provided under the "Index to Design" column. The ARARs Tables that appear in the Appendix are the ARARs that were approved in the OU1 ROD; therefore, no changes to the citations themselves will be made.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix III Page #: 3 of 8 Line #: N/A Code: C
Original Comment #: 8
Comment: Table 7-2a under "Requirements Assessment" paragraph 2 begins with "If determined to be necessary..." The requirement under NESHAPs 40 CFR 61 is that if estimated emission (uncontrolled) result in greater the 0.1 mrem per year that continuous monitoring is required.

Response: As the column title implies, the information provided in the column is simply an overall assessment of the requirement as it could be applied to the project. The next column in this table, "compliance strategy", then details how this requirement will be complied with by the project. In this column, it notes that the dryer gas cleaning system has continuous air monitoring for particulate radionuclides and radon.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix III Page #: 6 of 8 Line #: N/A Code: C
Original Comment #: 9
Comment: Table 7-2a under "Citation" Radon, states that BAT will be used to control fugitive radon emissions from waste pit materials. OEPA was under the understanding that ambient radon monitors would be set up on and around the WPRAP facility to ensure the effectiveness of BAT as applied to fugitive radon emissions.

Response: The ambient radon monitoring that Ohio EPA is referring to in the comment is the occupational radon monitoring that is discussed in the response to Ohio EPA Original Comment #1. The purpose of this monitoring, and the data gathered through it, is to provide information on radon levels in the area for the purpose of assessing occupational protection requirements for workers. It is neither the purpose, nor the intent, of this occupational monitoring to ensure the effectiveness of BAT.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Appendix III Page #: 7 of 8 Line #: N/A Code: C
Original Comment #: 10
Comment: Table 7-2a under "Substantive Permitting Requirements" misstates the time limits for visible emissions from paved and unpaved roadways. OAC 3745-17-08B is only a baseline for determining BAT for these air emission units. The correct time limits are 1 minute per 60 minutes, paved roadways; and 3 minutes per 60 minutes, unpaved roadways. (OAC 3745-17-12)

Response: See response to Ohio EPA Original Comment #7.

Action: No action required.

Operations Environmental Control Plan

Commenting Organization: Ohio EPA Commentor: HCES
Section #: N/A Page #: N/A Line #: N/A Code: general
Original Comment #: 11
Comment: The emissions controls described appear to satisfy Substantive Permitting Requirements and BAT. No specific comments on this section.

Response: Comment acknowledged.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.1 Page #: 8 Line #: N/A Code: c
Original Comment #: 12
Comment: Several elements of the FEMP Sitewide Control Plan are not included in this Section. Add to this Section a commitment to employ methods such as limiting drop height from loaders and excavators, restricting operations during high winds, etc.

Response: Section 5.3 of the Operations Environmental Control Plan states the "project will comply with the Fernald Environmental Management Project (FEMP) Sitewide Dust Control Policy". Although not specifically stated, WPRAP would employ such methods if necessary to control dust.

Action: No action required

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 5.2 Page #: 8 Line #: 45 Code: c
Original Comment #: 13
Comment: Past experience at the FEMP has shown that watering of paved roadways is of limited effectiveness because under several environmental conditions roads can dry very quickly. The text should be revised to include a commitment to use a mechanical street sweeper.

Response: Comment acknowledged. Should the effectiveness of the truck tire wash and water spray be limited, other means of dust control will be evaluated and implemented consistent with the FEMP Sitewide Dust Control Policy.

Action: No action required.

Sampling and Analysis Plan

*****U.S. EPA and Ohio EPA comments received on the Draft Sampling and Analysis Plan (SAP), raised various issues/concerns regarding the SAP's ability to demonstrate compliance with Envirocare Waste Acceptance Criteria (WAC), the U.S. Department of Transportation (DOT) Low-Specific Activity requirements, stormwater/wastewater discharge requirements, and general regulatory requirements.**

DOE evaluated the concerns identified in Agency comments and incorporated them into a revised Sampling and Analysis strategy that is provided in two Sampling and Analysis Plans: a Sampling and Analysis Plan for Waste Pit Materials; and a Sampling and Analysis Plan for Environmental Media. DOE believes the combination of these two SAPs provides the totality of all of the sampling and analysis activities to be performed by WPRAP in support of full scale operations for the project.

As a result of the complete re-write, although comments received from the Agencies have been addressed, a one-to-one comparison of page/line number isn't possible. Therefore, the following Responses to Comments for the SAP reference the above discussion as a response, and provide a general reference under "Action".***

Commenting Organization: Ohio EPA Commentor: HCES
Section #: N/A Page #: N/A Line #: N/A Code: general
Original Comment #: 14
Comment: The plan provides an acceptable way to gather data to insure air emissions regulatory limits are met.

Response: ***

Action: None.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: N/A Page #: N/A Line #: N/A Code: General
Original Comment #: 15
Comment: The supporting analyses are generally poorly documented or are not documented at all. For example, "weighted" averages and standard deviations are frequently referred to. The basis for the weighting, however, is never indicated. An assessment of the weighting calculations requires a detailed review of Appendix A which presents the statistical analysis for the SAP. Appendix A should be deleted or should be completely overhauled. The calculations, data, assumptions, etc. of the statistical analysis should be documented in text form as an appendix or in the main body of the report.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: N/A Page #: N/A Line #: N/A Code: General
Original Comment #: 16
Comment: Some readers of the SAP may not also read or have access to the other associated plans included in the larger document (e.g., Operations Environmental Control Plan, etc.). As a result, the SAP should be revised to include additional details or at least cross references to the other plans where appropriate. For example, the SAP indicates that a grab sample will be collected from the Storm Water Pond prior to discharging from the pond to Patty's Run. Is this sampling conducted in association with standard sitewide storm water management protocols and the NPDES permit or is it an independent activity? This information is provided in the Operations Environmental Control Plan but also should be summarized in the SAP.

Response: ***

Action: See Sampling and Analysis Plan for Environmental Media.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: N/A Page #: vi Line #: N/A Code: E
Original Comment #: 17
Comment: Add LSA-I, CIS, and RI/FS to the list of defined acronyms.

Response: Agree.

Action: The above terms have been added to the acronym list in both SAPs.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5 Page #: 5 Line #: 29 Code: C
Original Comment #: 18
Comment: The text should be revised to include a citation of the source document for the data that is mentioned in this sentence [i.e., RI Report for OU1 (DOE, 1994)]. Further, although it becomes apparent that the samples were taken from the materials contained in the waste pits, the text should specifically state this.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5 Page #: 5 Line #: 45 Code: C
Original Comment #: 19
Comment: The document should be revised to provide a summary of the PCB and herbicide data and a description the analysis performed to identify general levels and trends in this data.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials, Section 2.3.1.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5 Page #: 6 Line #: 1 Code: C
Original Comment #: 20
Comment: The text should summarize the discussed weighting calculations. Apparently, pit characterization data from Table 2-2 from the WPRAP Excavation Plan (IT, 1998) or other source was used. The supporting data and calculations should be presented and discussed.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5 Page #: 6 Line #: 1 Code: C
Original Comment #: 21
Comment: Wet waste tonnages were apparently used in the weighting calculations. If so, why were wet tonnages used rather than dry (i.e. processed wastes from the rotary dryer)?

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5 Page #: 6 Line #: 15 Code: C
Original Comment #: 22
Comment: The text should document the data and procedures used to select the VOAs, organics, BNAs, and pesticides considered in the statistical analysis.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5 Page #: 6 Line #: 20 Code: C
Original Comment #: 23
Comment: The previous studies referred to should be summarized or, at least, referenced.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5 Page #: 6 Line #: 25 Code: C
Original Comment #: 24
Comment: Appendix A as it is presented in this draft should be deleted. The analysis, data, assumptions, etc. of the statistical analysis should be documented in report form in a new appendix or in the main body of the report.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5.1 Page #: 6 Line #: 30 Code: C
Original Comment #: 25
Comment: Based on the referenced text, it appears that the determination of normality in the statistical study consisted of simple visual inspection of the raw and arcsine transformed data histograms. The study should include a more rigorous normality assessment using the Shapero Wilk test, particularly because the primary regulatory criteria used for WAC assessment (90^{th} percentile on the mean concentration) is based on the assumption of a normal distribution.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5.1 Page #: 6 Line #: 33 Code: C
Original Comment #: 26

Comment: The text should include a suitable reference for the "Chebyshev theorem for skewed distributions." A check of the 90 percent Chebyshev limits presented in Appendix A indicates that they were calculated using the Chebyshev formula for the lower bound estimate of the fraction of measurements that are symmetric about the mean. The actual calculations, therefore, do not seem to be appropriate as the raw data appear skewed as noted in the text.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5.1 Page #: 7 Line #: 4 Code: C
Original Comment #: 27

Comment: The selection of a "trainload" as a sample container appears to be arbitrary without supporting justification. Specifically, the text should discuss how Envirocare will assess WAC compliance for each trainload. Will a composite sample be taken from the train as a whole or will individual cars be sampled? Based on the results of this sampling, will the entire train be returned to Fernald or will additional sampling be performed to isolate just the car(s) that fail WAC? If individual cars are rejected rather than the entire train, it would be more appropriate to treat each bin as a sample container. This unit should then be used in the determination of the required number of samples.

Response: ***

Action: See response to Ohio EPA General Comment #2; see Sampling and Analysis Plan for Waste Pit Materials, Section 2.2.2.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5.3 Page #: 7 Line #: 21 Code: C
Original Comment #: 28

Comment: PCB data and associated analyses are absent from the referenced text and Appendix A. The text should be amended to include a presentation of this information so that the claim that "PCB analysis is not statistically required" can be verified.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials, Section 2.3.1.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5.5 Page #: 7 Line #: 37 Code: C
Original Comment #: 29
Comment: The text should define what is meant by "the weighting formula for Envirocare."

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5.5 Page #: 8 Line #: 16 Code: C
Original Comment #: 30
Comment: The sampling rate should be defined on a per unit volume basis (not per unit time). The assumption of a "trainload" as sample container should be reduced to the processing bin and the number of samples revised accordingly.

Response: ***

Action: See response to Ohio EPA General Comment #2; see Sampling and Analysis Plan for Waste Pit Materials, Section 2.2.2.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5.6 Page #: 8 Line #: 24 Code: E
Original Comment #: 31
Comment: The sum of the factors shown is incorrect. The correct value is 5.24E-07.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5.6 Page #: 8 Line #: 30 Code: C
Original Comment #: 32
Comment: The text states that the samples were collected "from around the pits" thus implying that the they were collected from pit walls. The samples were actually collected from the pit contents.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5.6 Page #: 8 Line #: 36 Code: C
Original Comment #: 33
Comment: The sampling rate should be defined on a per unit volume basis (not per unit time). The assumption of a "trainload" as sample container should be reduced to the processing bin and the number of samples revised accordingly.

Response: ***

Action: See response to Ohio EPA General Comment #2; see Sampling and Analysis Plan for Waste Pit Materials, Section 2.2.2.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 1.3.5.7 Page #: 9 Line #: 18 Code: C
Original Comment #: 34
Comment: U235 data and associated analyses are absent from the referenced text and Appendix A. The text should be amended to include a presentation of this information so that the claim that the estimated number of samples (three or fewer) can be verified as appropriate.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 2.3.2 Page #: 12 Line #: 43-46 Code: C
Original Comment #: 35
Comment: More detail should be provided (as it becomes available) on the discriminatory radon monitoring of stack emissions. The performance goal of 0.01 Ci/hr appears large, what is the basis for this goal?

Response: The EPA guidance stipulates that notification is required when the Rn-222 concentration exceeds 0.013 Ci/hr. The system that has been procured differentiates between Rn-220 and Rn-222 at lower concentrations. At higher concentrations, the Rn-219, Rn-220, and Rn-222 is combined into a total activity concentration. The 0.010± 10% Ci/hr reflects the minimum total concentration specification. However, it is expected that the actual detection limit will be much lower than this.

Action: No action required.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 2.1.2 Page #: 11 Line #: 11 Code: C
Original Comment #: 36
Comment: The sampling frequency should be defined as seven per bin rather than as one sample per hour.

Response: *** 000016

Action: See response to Ohio EPA General Comment #2; see Sampling and Analysis Plan for Waste Pit Materials, Section 2.2.2.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 2.2.2 Page #: 11 Line #: 46 Code: E
Original Comment #: 37
Comment: The correct section reference appears to be 1.2.3.

Response: ***

Action: None.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: 2.2.2 Page #: 12 Line #: 1 Code: C
Original Comment #: 38
Comment: The storm water from the SWM pond should not be discharged to Paddys Run if the turbidity of the discharged water exceeds that of Paddys Run.

Response: Stormwater from the SWM Pond will be discharged to Paddys Run in accordance with the NPDES permit.

Action: See Sampling and Analysis Plan for Environmental Media, Section 3.0.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 3.2.2 Page #: 23 Line #: 22 Code: C
Original Comment #: 39
Comment: The WAC parameters should be identified as Envirocare WAC parameters. In addition, Chart 1 should be designated as a formal table within this document.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: 3.2.4 Page #: 25 Line #: 27-30 Code: C
Original Comment #: 40
Comment: The stormwater from the SWM Pond can not be discharged to Paddys Run. Based on data received by the Division of Surface Water in support of the NPDES renewal, this water must be treated on site before being discharged.

Response: Stormwater from the SWM Pond will be discharged to Paddys Run in accordance with the NPDES permit.

Action: See Sampling and Analysis Plan for Environmental Media, Section 3.0.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 4.4.1 Page #: 28 Line #: 6 Code: E
Original Comment #: 41
Comment: The referenced text does not make sense.

Response: ***

Action: None.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 4.4.1 Page #: 28 Line #: 13 Code: E
Original Comment #: 42
Comment: The word "analyze" should be "analyte."

Response: ***

Action: None.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 4.4.1 Page #: 29 Line #: 12 Code: E
Original Comment #: 43
Comment: The referenced text is missing punctuation.

Response: ***

Action: None.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: 4.4.1 Page #: 29 Line #: 19 Code: C
Original Comment #: 44
Comment: The derivation of the equation from the 10CFR71 equation for LSA-1 should be presented in the text.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials, Section 2.5

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: Table 1-3 Page #: 33 Line #: N/A Code: E
Original Comment #: 45
Comment: The acronyms used in this table need to be defined (e.g., Sxs, NR, etc.).

Response: ***

Action: None.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: Tables 3.1 through 3.2.6 Page #: 39 - 54 Line #: N/A Code: E
Original Comment #: 46
Comment: The referenced tables should be assigned table numbers consistent with the table numbering scheme used in Sections 1 and 2 (e.g., Table 1-1, etc.).

Response: ***

Action: None.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: Appendix A Page #: 68, 70, 72 Line #: N/A Code: C
Original Comment #: 47
Comment: For the following constituents, why are the weighted averages zero and why is the variance not equal to zero (given that only one sample exists for the given waste pit): 1, 2-DCA in pits 4, 6, and the clear well; carbon tetrachloride in pits 4, 6, the burn pit, and the clear well; and vinyl chloride in pits 4, 6, and the clear well?

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: Appendix A Page #: 69 Line #: N/A Code: C
Original Comment #: 48
Comment: If four pits were excluded from the sample size calculations for 1, 2-DCA, why are n - 7 degrees of freedom used?

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: Appendix A Page #: 71 Line #: N/A Code: C
Original Comment #: 49
Comment: If four pits were excluded from the sample size calculations for carbon tetrachloride, why are n - 7 degrees of freedom used?

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Commenting Organization: OEPA Commentor: HSI GeoTrans, Inc.
Section #: Appendix A Page #: 72 Line #: N/A Code: C
Original Comment #: 50
Comment: If three pits were excluded from the sample size calculations for vinyl chloride, why are n - 7 degrees of freedom used?

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment is no longer part of the SAP.

Performance Tests Criteria

Commenting Organization: Ohio EPA Commentor: HCES
Section #: N/A Page #: N/A Line #: N/A Code: general
Original Comment #: 51
Comment: The introduction to this section mentions Intent to Test procedures. It should be noted that a report on the results of the test should also be submitted as in the case of all performance tests.

Response: A Performance Test Report will be prepared and submitted to USEPA and Ohio EPA.

Action: The text has been revised to reflect the development and submission of the Performance Test Report.

Commenting Organization: Ohio EPA Commentor: HCES
Section #: N/A Page #: N/A Line #: N/A Code:
Original Comment #: 52
Comment: All new Permits to Install contain the following language.

1. The permittee shall submit required reports in the following manner:

   a. Reports of any required monitoring and/or record keeping information shall be submitted by mail to the two individuals as addressed below.

   b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and record keeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted by mail to the two individuals as addressed below. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter.

The reports shall be submitted quarterly i.e. by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

Peter J. Sturdevant
Air Quality Management Division
1632 Central Parkway
Cincinnati, OH 45210

Thomas A. Schneider
Office of Federal Facilities Oversight
401 East Fifth Street
Dayton, OH 45402

Response: DOE will comply with the above reporting requirements.

Action: The text in Section 6 has been revised to state that DOE will comply with Ohio EPA reporting requirements.

Storm water/Waste water Management Plan

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: 3 Page #: N/A Line #: N/A Code: general
Original Comment #: 53
Comment: The Action item in response to Ohio EPA comment #14 on the draft final WPRAP Remedial Design Package stated that storm water and erosion controls for material stockpiles would be addressed in the Storm water Management Plan. Please add a Section to the SWMP that addresses storm water and erosion controls for material storage piles.

Response: Stormwater and erosion control for storage piles is more appropriately addressed in the Operational Environmental Control Plan. The text will be revised to reference this document.

Action: The text has been revised to reference the Operational Environmental Control Plan.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: N/A Page #: N/A Line #: N/A Code: C
Original Comment #: 54
Comment: Section 1.3 of the SWMP states that "...the 25-year, 24-hour duration storm intensity would produce approximately 4.8 inches of precipitation in the region. Although greater intensity storm events are certainly possible, for the purposes of design, this has been accepted as the reasonable maximum design criteria to be used for sizing storm water management facilities." Each section then gives a volume of water expected to be generated from this storm event. However there is nothing to indicate what storm water management facilities are sized for or are capable of handling. For example there is no indication that the K-65 Runoff Basin or the Clear well will be able to deal with the flows projected from this event. The

Site Water Balance Process Stream Table only deals with average flow, there is no similar table that describes the peak flows during this event. We need to know that the storm water management facilities are sized for and will handle flows from the 25-year, 24-hour duration storm. If flows from OU1 will be combined with other flows, will the storm water management facilities be able to handle the combined flows? For example in Section 5.3, the flows from the 25-year, 24-hour duration storm in the early excavation phase the K-65 Runoff Basin will receive approximately 1,072,324 gallons of water from the waste pit area. If the K-65 Runoff Basin only holds 1,500,000 gallons, receives 1,000,000 gallons from other drainage areas and is not pumping out because of a termination to pump to the BSL, there may be an issue that requires a contingency. Or the pumping capacity of the K-65 Runoff Basin may not be sufficient to keep it from overflowing during this event. These are the situations that we would like to know the project has considered and is prepared for.

Response: The 25-year, 24-hour storm event is the maximum design basis established for the new storm water management features of the facility. A rainfall in excess of the 25-year, 24-hour storm event will exceed the design capacity of the facility storm water management features. The K-65 basin, Clearwell, and existing stormwater management features are of pre-existing fixed sizes which are impractical to modify and which may not be capable of total containment of the total quantity of water produced during an excessive rainfall event. For this reason, stormwater management contingencies have been established as discussed in Section 7 of the subject document.

Action: No action required.

Commenting Organization: Ohio EPA Commentor: DSW
Section #:6.2 Page #: 19 Line #: 17-20 Code: C
Original Comment #: 55

Comment: This section describes the installation of silt fences along the perimeter of open, disturbed areas which are under excavation. This is the typical incorrect installation of silt fence. This type of installation directs flow along the base of the fence to the low spot in the fence where the fence will be breached. The purpose of the silt fence is to act as a dam to hold water. The water will filter through the porous fabric slowly allowing any sediment to settle out. Additionally it may slow sheet flow to prevent erosion. The method of installation described in this section tends to concentrate flow at the low point of the silt fence so that additional erosion occurs. It is very important to install silt fence on the contour for it to function properly. Smaller lengths turned uphill at the ends to capture flow are preferred over perimeter fencing. Please see the ODNR manual *Rainwater and Land Development* for correct installation.

Response: Consistent with the ODNR guidance, silt fence will be installed "on the contour" at the perimeter of open, disturbed areas.

Action: The text has been revised to cite the ODNR guidance, and adherence to this guidance.

Commenting Organization: Ohio EPA Commentor: DSW
Section #: 7.2 Page #: 20-21 Line #: N/A Code: C
Original Comment #: 56

Comment: It is difficult to understand the prioritization of termination to the BSL. The opening paragraph states that prioritization will be implemented roughly in the order presented. The third bullet from the end describes that bullet as receiving the highest priority and the second bullet being the highest priority. Having a clearly defined shutdown path with the streams identified as in the water balance flow diagram would make it unambiguous. As this sections reads, it is not clear what the shutdown priority is.

We believe that any activity that generates a stream to the BSL should be terminated in anticipation of a significant rain event. For example, activities that would cause decontamination water to be generated, or the WTS sand filters to need to be backwashed should cease. Frequent communication between the generator of streams in the waste pit area and the operators of the AWWT will be necessary during and in anticipation of significant precipitation events so that the project can anticipate a shutdown of the BSL as a receiving body and make adjustments accordingly.

Response: WPRAP will terminate activities or otherwise respond to impending rain events as directed by the ARWWP. The bullets will be reordered to address the noted discrepancy in the text.

Action: The bullets have been reordered.

U.S. Environmental Protection Agency Comments on the Draft Waste Pits Remedial Action Project Remedial Action Package

WPRAP Operations and Maintenance Plan

Commenting Organization: U.S. EPA — Commentor: Saric
Section #: Not Applicable (NA) — Page #: NA — Line #: NA
Original General Comment #: 1

Comment: An operation and maintenance (O&M) plan should provide O&M personnel with an overview of facility operations and the specific information needed to (1) perform regular O&M activities and (2) adequately manage contingencies. Such information includes step-by-step instructions for operating various equipment, operating parameters and regular operating conditions, alarm conditions, procedures to mitigate alarm conditions, equipment descriptions and maintenance schedules, and a contingency plan. The O&M plan reviewed provides an overview of facility operations but does not include the specific information needed to operate and maintain the equipment and manage contingencies. The O&M plan should be revised to include all the specific information needed by O&M personnel to successfully operate and maintain the equipment during regular operations as well as contingencies.

Response: The O&M Plan provided in the Remedial Action (RA) Package contains all of the required components detailed in the U.S. EPA approved Remedial Action Work Plan (RAWP), as described in Table 4-3 of the RAWP. Specifically, the O&M Plan is designed to provide all personnel with an overview of facility operations and maintenance, with details being more appropriately provided in other documents referenced within the O&M Plan. This approach was developed to provide USEPA/Ohio EPA with enough detail to ensure that the remediation activities are being performed in a way which supports the implementation of the selected remedy of the OU1 Record of Decision, in accordance with the requirements (e.g., ARARs) identified therein.

As discussed in the O&M Plan (e.g., Sections 6.3 and 8.0), Standard Operating Procedures (SOPs) are being developed to provide the level of detail needed by the O&M personnel to successfully operate and maintain the various equipment during regular operations as well as contingencies. It is these SOPs which will appropriately provide the step-by-step instructions for operating the various pieces of equipment, both during regular and off-normal operating conditions, including a description of operating parameters and addressing alarm conditions. Details relative to the required maintenance of the various pieces of equipment are also presented within these SOPs, and will also be addressed through the established maintenance system described in Section 6.1. Operational contingencies are discussed in Section 3.0 of the O&M Plan, although implementing details are covered in the SOPs. With the complexity of the project, including the number and types of activities to be performed, and the number and types of equipment, to try to provide the level of detail requested, within the O&M Plan, would serve no benefit in facilitating operations. A listing of the planned SOPs is given in Section 8 of this RA Package.

Based on the above, DOE does not plan on providing EPA with an overall additional level of detail, which would result in modifying the plan agreed to through the RAWP. However, Section 3.0 of the O&M Plan will be modified to make it clearer how all of these various operational documents play a part in addressing contengencies.

Action: Section 3.0 of the O&M Plan has been revised to make it clearer how all of the various operational documents play a part in addressing contingencies.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 2

Comment: During recent discussions between the U.S. Environmental Protection Agency (U.S. EPA) and the U.S. Department of Energy (DOE), DOE indicated that the dryers may not be operational in time to meet the March 1999 milestone for loading waste into railcars specified in the remedial action work plan for Operable Unit 1. However, the O&M Plan does not address the possibility that the dryers will not be operational by March 1999. The plan should be revised to address this contingency. Specifically, the plan should address design changes and O&M activities associated with any additional equipment required for waste shipments to continue until the dryers become operational.

Response: The First Loadout Work Plan, which was reviewed and conditionally approved by the EPAs, addresses the contingencies discussed above, including design changes and associated O&M activities. The O&M Plan will be revised to reflect the First Loadout concept as presented in the First Loadout Work Plan, and how WPRAP will be phased to bring it into full scale operations.

Action: Section 3.0 has been revised to reflect the above.

WPRAP Sampling and Analysis Plan

*****U.S. EPA and Ohio EPA comments received on the Draft Sampling and Analysis Plan (SAP), raised various issues/concerns regarding the SAP's ability to demonstrate compliance with Envirocare Waste Acceptance Criteria (WAC), the U.S. Department of Transportation (DOT) Low-Specific Activity requirements, stormwater/wastewater discharge requirements, and general regulatory requirements.**

DOE evaluated the concerns identified in Agency comments and incorporated them into a revised Sampling and Analysis strategy that is provided in two Sampling and Analysis Plans: a Sampling and Analysis Plan for Waste Pit Materials; and a Sampling and Analysis Plan for Environmental Media. DOE believes the combination of these two SAPs provides the totality of all of the sampling and analysis activities to be performed by WPRAP in support of full scale operations for the project.

As a result of the complete re-write, although comments received from the Agencies have been addressed, a one-to-one comparison of page/line number isn't possible. Therefore, the following Responses to Comments for the SAP reference the above discussion as a response, and provide a general reference under "Action".***

GENERAL COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 1

Comment: In general, the objectives for the sampling and analysis plan (SAP) do not appear to be fully realized. In particular, three objectives presented in Section 1.2 raise the largest concerns. First, the text discusses compliance of blended waste in terms of meeting the Envirocare waste acceptance criteria (WAC) at the 90 percent confidence level. However, without specific supporting information, including WAC compliance calculations, the assumption that WAC compliance can be achieved cannot be verified. Second, one purpose of the SAP is to demonstrate that waste is depleted with respect to uranium 235 at a 90 percent confidence level. However, according to the text, "CIS" and remedial investigation/feasibility study (RI/FS) data indicates the presence of uranium at a slight level of enrichment. Third, the text attempts to demonstrate that the blended waste would meet the definition of U.S. Department of Transportation (DOT) low specific activity type I (LSA-I) waste. However, given the omission of specific calculations and based on available sampling data, the LSA-I designation is questionable. Overall, the SAP should be revised and expanded to provide the information needed to verify its assertion through independent calculation.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP. See also Response to General Comment #4 for discussion on LSA designation.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 2

Comment: The statistical analysis that underlies the design of the SAP appears to be incomplete. The SAP lacks definitions for terms and relevant equations, making it difficult to replicate calculations independently. Limited independent recalculation generated results similar to some but not all those in the SAP. Examples of these problems are discussed in the original specific comments on the SAP. Furthermore, different data sets are used in the SAP for different calculations. For example, radionuclide data for about 90 samples is used for calculations in Section 1.3.5.4 and in Tables I-4 and I-5, but radionuclide data for only 38 samples is used for calculations in Section 1.3.5.6. No basis for biasing of calculation results through data selection is included in the plan. The text should be revised to clearly explain the statistical analysis underlying the sampling design.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.3.5.8 Page #: 9 Line #: NA
Original General Comment #: 3

Comment: The conclusion that one well-composited waste sample from each production bin (assuming four to six railcar loads are present in each bin) is adequate appears to be questionable and should be reconsidered. In some cases, this oversimplification of the characterization process may be appropriate if the waste on the train is well blended. However, the sampling frequency may not be acceptable to all the parties involved, including Envirocare and the Utah Department of Environmental Quality. The most practical alternative sampling design would be to collect one well-composited waste sample from each railcar load. In fact, commercial hazardous waste treatment, storage, or disposal facilities generally require that a separate, well-composited sample be collected from every bulk container (such as a tank or semitrailer) to verify that the material in the container meets the "fingerprint" established for the waste. In addition, a criterion for the relative standard deviation of the analytical results for multiple samples from one trainload should be included as an indicator of the actual heterogeneity of the blended waste. The text should be revised to address these issues.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. Section 2.0 specifically addresses Envirocare's expectations for the FEMP as a generator and provides a strategy for meeting those expectations.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.3.5.8 Page #: 9 Line #: NA
Original General Comment #: 4

Comment: The conclusion that the blended waste will meet the LSA-I criteria detailed in Section 1.3.5.6 appears to be questionable. This conclusion assumes that the waste will be well mixed even though sampling data indicates considerable waste heterogeneity. In fact, this heterogeneity demonstrates activity differences of several orders of magnitude within a single waste pit. As discussed in Original Specific Comment 8, some waste shipments may fail to meet LSA-I criteria. Such failures may impact the transportability of the waste. Strict controls should be established to ensure that waste is adequately blended and fully tested in order to ensure compliance with DOT regulations. The text should be revised to address this issue.

Response: DOT and the U.S. Nuclear Regulatory Commission jointly developed guidance to assist shippers in preparing low specific activity materials and surface contaminated objects in compliance with Federal regulations. The guidance specifically states that "The terms, essentially uniformly distributed and distributed throughout, are both intended to disallow categorization of material as LSA in a situation during which a small volume of very high radioactivity is placed within a large quantity of nonradioactive or slightly radioactive material, thereby reducing the average concentration to within specified limits." In essence, the requirement for 'essentially uniformly distributed' prevents shippers from diluting highly radioactive materials, such as fuel cores, in relatively inert material, such as soil, to avoid more stringent packaging requirements.

The excavation and blending plan, in fact, is designed to provide a waste which meets the definition of DOT LSA-I, in all respects. Specifically, this process is based on deliberately excavating and blending to achieve a designed mean value for critical parameters relative to LSA-I. In the process of excavating, blending, loading of the bins, and unloading of the bins into railcars, the waste material is mixed several times. In many cases (e.g. excavation) the process cuts across the natural stratification and significantly improves homogeneity. Again, the result will be a designed homogeneity that is not possible with random mixing processes. In the current case that variability will have to be relatively low if the mean is to be met.

Action: None required.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.3.5.8 Page #: 9 Line #: NA
Original General Comment #: 5
Comment: The conclusion that three waste samples are adequate to characterize uranium 235 levels as depleted, natural, or enriched (as detailed in Section 1.3.5.7) is not technically justified as discussed in Original Specific Comment 12. The text should be revised to clearly justify this conclusion.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 6
Comment: The SAP does not include any contingencies to address the possibility of encountering RCRA-listed waste that may be present in the waste pits. The SAP should be revised to include sampling and analysis procedures for mixed waste that is potentially present.

Response: The issue of addressing the possibility of encountering RCRA-listed waste is discussed in the response to Ohio EPA Original Comment #3 and is as follows:

"As you know, from verbal briefings on the topic, Fluor Daniel Fernald (FDF) has conducted an extensive reevaluation of historical information relating to waste disposal in the Operational Unit 1 Waste Pits. The purpose of the review was to ensure that previous determinations concerning the RCRA status of the pits remain appropriate. The DOE requested that FDF present in a report, without regulatory conclusions, the information resulting from the referenced reevaluation along with associated uncertainties. DOE's conclusions and position regarding the regulatory status of the OU1 waste pits is presented in the attached letter from DOE to FDF. The letter also presents background on the reevaluation and identifies the seven principal areas of review by FDF along with DOE's position on the conclusions of each area of review.

In summary, the DOE has concluded that the hazardous waste determinations made previously for the waste pits remain accurate. It is the DOE's position that the HWMU's, SWMU's, and hazardous wastes and constituents that were reported in the FEMP's permit application as well as the OU1 RI/FS and ROD remain accurate.

It should be noted that FDF's review did identify one instance of disposal of what could be a listed solvent (NEC solvent - see attached letter), most likely within a trench excavated into environmental media in the burn pit area. While uncertainties exist concerning the disposal of this solvent, as implied within the attached letter, it is DOE's intent to conservatively attempt to isolate and manage, if identifiable as such, any environmental media affected by the disposal. Due to the extremely localized nature of the disposal area within environmental media, this strategy is expected to have no substantive impact on implementation of remedial action as described in the RA package. "

Action: No action required for this RA Package. Prior to excavation in the Burn Pit area, DOE will prepare and implement a plan, subject to the Agencies' approval, that will use analytical methods to attempt to identify the presence within environmental media of NEC solvent constituents above to be established health based levels. If identified, the plan will provide for the segregation of this implicated media and management as a RCRA listed waste.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Analytical Abbreviations Page #: vi Line #: NA
Original General Comment #: 7
Comment: The list of abbreviations and acronyms is incomplete and confusing. The many omissions from the list impede and sometimes prevent comprehension of the text and statistics. Examples of omissions include the data source "CIS", the term "A_2" (sometimes presented as "A2"), and most of the statistical terms and labels such as "RT' and "Sxs". The list should be revised to completely identify all terms used in the test and statistics.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Appendix A Page #: NA Line #: NA
Original General Comment #: 8
Comment: This appendix is essentially a series of spreadsheets with no footnotes or explanations of the meaning of the numbers presented. Therefore, the appendix is very difficult to follow. The appendix should be revised to (1) define the field names and symbols, (2) define (or reference) the data sets and their sources, and (3) include the formulas for all calculations except standard spreadsheet functions. Because of the reviewer's difficulties in comprehending the spreadsheets, only limited attempts were made to verify that the data presented supports the conclusions stated in the SAP.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.2.2 Page #: 2 Line #: NA
Original Specific Comment #: 1
Comment: Section 1.2.2 is intended to address "process wastewater" and "contaminated storm water." However, Line 2 on Page 2 cites a somewhat different group of aqueous streams, namely "process water, wastewater, and contact and noncontact storm water." The text should be revised to use consistent nomenclature for the aqueous streams or to defne the reasons for the distinctions made.

Also, the sources of the various aqueous streams discussed in Section 1.2.2 and the relationships of the aqueous streams to one another are not clear. The text should be revised to summarize the cited portions of the remedial design package, or a simple block diagram should be included to show all the processes and facilities discussed in this section as well as the proposed sampling points. Until such information is provided, it is impossible to determine whether the selected sampling points are appropriate and adequate.

Finally, the stated sampling frequency suggests that the waste constituent concentrations at the sampling points are at or near steady-state conditions. It is not obvious that this is the case. The SAP should be revised to demonstrate that the holding tanks (the Clearwell and the Grey Water Sump) have sufficient volume relative to the inflow that the sampling frequency (for grab samples and composited grab samples) will result in representative samples being collected.

Response: ***

Action: See Sampling and Analysis Plan for Environmental Media which specifically defines each media and its associated sampling.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.2.2 Page #: 3 Line #: 19 and 20
Original Specific Comment #: 2
Comment: The text states that the primary focus of radiochemical analyses will be gamma spectroscopy with limited use of alpha spectroscopy and gross alpha-beta counting. However, some of the radionuclides listed in Table 1-1 are such low-energy gamma emitters that detection and quantification may not be possible using gamma spectroscopy. In particular, thorium 230 and thorium 232 should be analyzed for using alpha spectroscopy unless secular equilibrium in the water samples can be demonstrated. The text should be revised to address this issue.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.2.3 Page #: 3 Line #: 34
Original Specific Comment #: 3
Comment: The text states that the Storm Water Management Pond will be monitored for total uranium, and Table 1-1 indicates that only total dissolved uranium will be analyzed for. However, it is not clearly stated whether the 20 parts per billion limit for uranium applies to total uranium or total dissolved uranium. Because the presence of suspended solids could increase the total concentration of uranium in the water, use of only total dissolved uranium an an analyte may not be sufficient. The text should be revised to be made consistent with general Fernald Environmental Management Project (FEMP) practices regarding monitoring for total uranium.

Response: ***

Action: See Sampling and Analysis Plan for Environmental Media which reflects monitoring as agreed upon between Ohio EPA and DOE.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.2.4 Page #: 4 Line #: 2
Original Specific Comment #: 4
Comment: The text states that the dryer off-gas will be continuously sampled for radionuclide analysis, and the radiological parameters are listed in Table 1-1. It is not clear why radium 226 is not included as a parameter. Because this isotope is considered to one of the primary contaminants of concern at the FEMP, it would be appropriate to monitor for this isotope in the off-gas system. The text should be revised to include radium 226 as an analytical parameter for the dryer off-gas.

Response: Per 40 CFR 61 Subpart H, all radionuclide emissions from the dryer stack which could contribute greater than 10% of the potential effective dose equivalent to offsite receptors shall be measured. Based on the CAP88 modeling results of potential radionuclide emissions from the dryer stack, U^{238} and Th^{230} contributed greater than 10% of the potential effective dose equivalent to offsite receptors. These radionuclide emissions from the dryer stack are required to be measured. The rest of the uranium and thorium isotopes contributed between 1% and 10% of the potential effective dose equivalent to offsite receptors. These radionuclide emissions will also be measured because of the potential error in obtaining a representative sample of the waste pit materials. The decision was made not to measure the radionuclide Ra^{226} because it represents less than 1% of the potential effective dose equivalent to offsite receptors.

Action: No action required.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.3.5 Page #: 6 Line #: 15
Original Specific Comment #: 5
Comment: The text introduces the term "Total Radiological parameters." The meaning of this term is unclear. The text should be revised to define this term.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.3.5.1 Page #: 6 Line #: 33
Original Specific Comment #: 6
Comment: The SAP cites the "Chebyshev Theorem" here and in subsequent text. Chebyshev was a prolific mathematician who produced many useful equations. It was assumed by the reviewer that the "Chebychev Inequality" (Equation A.109 in Lehmann [1975] and Equation 24.9 in Steel and Torrie [1980]) is the theorem being cited in the SAP. However, this assumption may be incorrect, because Line 35 on Page 6 states that the theorem is of little use in estimating the necessary sample size, whereas Steel and Torrie (1980) present an example of using the Chebychev Inequality to estimate sample size. The text should be revised to explicitly identify all formulas used in calculations, including the "Chebychev Theorem."

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 1.3.5.5 Page #: 7 Line #: 37
Original Specific Comment #: 7
Comment: The text states that the radiological data was tested for WAC "using a weighting formula for Envirocare." The reviewer assumed that this formula is the same as that used for classify low specific activity material. The text should be revised to identify the weighting procedure and formula used for the WAC calculations.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

Commenting Organization: U.S. EPA | Commentor: Saric
Section #: 1.3.5.6 | Page #: 8 | Line #: 19
Original Specific Comment #: 8

Comment: Section 1.3.5.6 discusses determining attainment of the LSA-I criteria. However, the definition of LSA-I material in 49 Code of Federal Regulations (CFR) Section 173.403 includes the requirement that the "radioactive material is essentially uniformly distributed." Previous analytical results for the waste pits show that the radionuclides are not uniformly distributed; an activity difference of more than three orders of magnitude exists for some radionuclides within a single waste unit. If the waste does not meet the LSA-I criteria, covered railcars cannot be used to transport the waste to the disposal site. The text should be revised to clearly state that the LSA-I criteria are the ones that the waste is least likely to meet. In addition, the text should emphasize that both adequate mixing and testing to verify that adequate mixing has occurred are essential to attainment of LSA-I criteria.

Response: ***

Action: See response to USEPA Original General Comment #4 on the SAP.

Commenting Organization: U.S. EPA | Commentor: Saric
Section #: 1.3.5.6 | Page #: 8 | Line #: 25 and 26
Original Specific Comment #: 9

Comment: The text concludes that certain radionuclides do not impact calculations of whether blended waste meets LSA-I criteria. The plutonium isotopes identified in the text have very low A_2 values (activities as defined by DOT regulations), so the calculations used to reach this conclusion should be presented or cited in the text.

Response: ***

Action: See response to USEPA Original General Comment #4 on the SAP.

Commenting Organization: U.S. EPA | Commentor: Saric
Section #: 1.3.5.6 | Page #: 8 | Line #: 36
Original Specific Comment #: 10

Comment: The text states that five blended waste samples will be needed to demonstrate compliance with LSA-I criteria. However, the calculation used to determine this number of samples could not be replicated. The procedure used to calculate this number should be presented in the text or a cited appendix. Furthermore, Line 37 states that 6 to 10 samples will be collected from each train, but other text, such as Line 16 on Page 8 and Line 6 on Page 9, states that 6 to 15 samples will be collected from each train. The text should be revised to resolve these inconsistencies.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

Commenting Organization: U.S. EPA | Commentor: Saric
Section #: 1.3.5.7 | Page #: 9 | Line #: NA
Original Specific Comment #: 11

Comment: According to the text, the "CIS" and RI/FS data indicates that the uranium present in the waste pits may be slightly enriched. The text further indicates that the presence of enriched uranium in the waste pits is inconsistent with historical and process information. Although the facility largely processed depleted uranium, it handled enriched uranium as well. The text should be revised to acknowledge this fact.

Moreover, the text indicates that the indications of enriched uranium in the "CIS" and RI/FS data may be a result of the use of gamma spectroscopy, because the samples were analyzed using small aliquots at high dilutions. The text also suggests that gamma spectroscopy will provide more accurate results when larges samples are used. Although gamma spectroscopy could be used for larger samples, this analytical technique may not provide accurate results. In many cases, the gamma photons from uranium 235 are easily counted while those from uranium 238 are not. Use of gamma spectroscopy could lead to underestimation of the uranium 238 concentrations present. Most of the waste in the pits is likely to contain depleted uranium, but a small portion of the waste may also contain enriched uranium. Therefore, the text should be revised to include use of both alpha and gamma spectroscopy to determine whether enriched uranium is present.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

Commenting Organization: U.S. EPA | Commentor: Saric
Section #: 1.3.5.7 | Page #: 9 | Line #: 19
Original Specific Comment #: 12

Comment: The text states that the number of samples needed to determine the enrichment status of uranium is three or fewer. However, this statement is not technically supported. A determination of enrichment status uses the ratio of two analytical results. Propagation of error analysis shows that such ratios have relatively large variances. Therefore, a relatively large number of samples would normally be required. The text should be revised to clearly describe the procedure used to estimate the number of samples needed to determine the enrichment status of uranium, or this information should be included in an appendix and properly cited.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

and not half the detection limit for the nondetect results. These sorts of calculation errors result in decreased variances for individual data sets, which in turn lead to underestimation of the variance over all data sets and thus to SAP objectives. In another discrepancy, Page 3 of Appendix A presents five data sets but includes summary statistics for only the first four. Page 4 of Appendix A presents further calculations for the first four data sets but not for the fifth one. The first four data sets have a total mass fraction of 0.79; it is assumed that the fifth data set accounts for the mass fraction of 0.21, but this assumption should be confirmed. Finally, the last calculations in the lower part of Page 4 are largely incomprehensible, especially the "Sxs" and "t.20" terms. Most of the other spreadsheets in Appendix A are similar to those on Pages 3 and 4. The appendix should be revised to clearly identify all the calculations and numbers used in the spreadsheets and to resolve such discrepancies as those discussed above.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Appendix A Page #: 16 Line #: NA
Original Specific Comment #: 17
Comment: This table shows a calculation used to estimate whether the blended waste meets the LSA-I criteria based on weighted mean activities. Such a calculation obscures variations within the waste, as noted in Original Specific Comment 8. If one considers the 90th percentile activities (obtained by adding 1.28 standard deviation units to the mean), one finds that the 90th percentile activity of thorium 230 alone is 1.45 times the A_2 criterion for LSA-I waste. If the overall standard deviation for thorium 230 is underestimated (as is the case for arsenic, see Original Specific Comment 16), the exceedance of the criterion will be even greater. The table should be revised to include an uncertainty analysis of the problems caused by the heterogenity of the waste.

Response: ***

Action: See Sampling and Analysis Plan for Waste Pit Materials. The approach identified in this comment in no longer a part of the SAP.

WPRAP Performance Test Criteria

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 1
Comment: The text indicates that performance testing will be conducted only once at the beginning of dryer operations. Considering that the dryers will operate for several years and that the concentrations of contaminants in soil entering the dryers will change over time, testing the performance of the dryers' emission control system only once is not adequate. The text should be revised to propose performance

ATTACHMENT

2319

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ACTION: D.CARR/T.HAGEN
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MAR 23 1999

DOE-0545-99

Mr. John Bradburne, President
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P.O. Box 538704
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Dear Mr. Bradburne:

SUMMARY REPORT OF HISTORICAL INFORMATION AND OPERABLE UNIT 1 REMEDIAL ACTIONS

Reference: Letter No. C:OOTP:98-0525, CONTRACT DE-AC24-92OR21972, SUMMARY REPORT OF HISTORICAL INFORMATION & OPERABLE UNIT 1 ("OU 1") REMEDIAL ACTIONS

This letter is to advise you that the Department of Energy (DOE) has reviewed your summary report of historical information associated with past disposal into the Operable Unit 1 (OU1) Waste Pits.[1] FDF's re-review of historic information focused on whether listed hazardous waste was disposed of into the waste pits. Based upon our review of your report together with the supporting documents, DOE believes that the hazardous waste determinations previously made by FDF remain appropriate. The preliminary findings contained in the summary report are inconclusive and significant uncertainties persist despite the extensive reexamination of the historic information. It is also DOE's opinion that the HWMU's, SWMU's, and hazardous wastes and constituents that were reported in the FEMP's permit application, various DFOs, RI/FS and ROD remain accurate. The summary report information does not affect implementation of the selected remedial actions for OU1.

[1]The Fernald Environmental Management Project's ("FEMP") hazardous waste management units are identified in its final permit application submitted by both the Department of Energy ("DOE") and FDF under the Resource Conservation and Recovery Act ("RCRA"). FDF has not recommended any modifications in the permit application as a result of its re-analysis. Additionally, FDF did not identify any hazardous waste management units ("HWMU"), solid waste management units ("SWMU") or any hazardous constituents or wastes that were not previously identified or evaluated during preparation of the RCRA permit application, the various Director's Findings & Orders ("DF&O") on the integration of RCRA and CERCLA, the OU 1 remedial investigation and feasibility study ("RI/FS") and the proposed plan and record of decision ("ROD").

BACKGROUND

FDF re-examined historic documents to verify the condition of materials in the waste pits for purposes of subcontracting the remedial actions at OU1. In doing so FDF looked at records spanning Fernald's entire 37-year operating history.[2] FDF identified seven areas in which partial information indicated that listed hazardous wastes or constituents may have been placed in or near the waste pits.[3] FDF augmented its document review with interviews of former production workers. Overall, the results of the research were inconclusive with the possible exception of the lead on the NEC solvents. No new radiological or chemical constituents were identified. The sources or compositions or disposition of certain wastes (e.g., NEC sludges) could not be conclusively documented. Recollections of former workers who may have handled or disposed of wastes varied. For example, FDF identified several documents discussing planned disposal of potentially hazardous materials into the waste pits and tried to identify whether or not disposal of the referenced material occurred in fact. Actual disposal could not be verified. In other instances the actual source or composition of waste could not be verified. After extensive reexamination, significant uncertainties remain about whether there were any listed hazardous wastes or constituents introduced into the waste pits that would change either the remedy or the regulatory requirements for disposal of remediation wastes off-site.[4]

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[2] Presumably, FDF reviewed many of the same historical documents when it prepared Fernald's RCRA permit application and when it completed the RI/FS. The fact that various solvents may have been placed in the waste pits is not new information. It is well documented and was considered in the RI/FS.

[3] The seven areas of research include the National Electric Coils ("NEC") solvents, a comparison of material type codes, still bottoms from the Detrex still, excess or laboratory chemicals, solvent disposal and barium chloride. In each of these areas existing information or documentation was re-evaluated by FDF. Several of the archived documents were reviewed by FDF apparently for the first time.

[4] The RI/FS for OU 1 accounted for over 90% of the contents of the waste pits. This accounting was done by reviewing Fernald's material control and accountability records, other records and sampling. It included chemical constituents such as those found in solvent mixtures and other organic chemicals that were used at Fernald and identified in the pits through sampling. The quantity of materials discussed in the summary report is infinitesimal by comparison.

HISTORIC INFORMATION RE-ANALYSIS

1. National Electric Coil ("NEC") Solvents

Several archived documents indicate that in 1976, eight drums of waste solvents, two drums of unanalyzed sludge and one drum of "solvent/sludge" were received from NEC in Louisville, Kentucky. In April 1977 the two drums of unanalyzed sludge were discarded into Waste Pit 4. The solvent/sludge drum and the eight drums of waste solvents were discarded in the waste pit area.[5] Old planning documents indicate that the contents of these nine drums would be buried in a new trench that would be dug later within one of the waste pits. The drums would have been rinsed and disposed of in Pit 4 according to the planning documents. FDF interviewed workers who handled these materials in 1976/1977 and their recollections all varied as to the probable disposal location. However, it would appear from the summary information that the most probable disposal location is the burn pit area. Because the available information is inconclusive we can make the assumption that any NEC materials that were disposed of in 1976 or 1977 may be contained in environmental media within the burn pit area. EPA expressly addresses the uncertainties associated with remediation and old disposal practices such as these in its "contained-in" policy. Under this policy environmental media contaminated with hazardous constituents are not hazardous waste, per se, and are not generally subject to regulation unless a risk-based threshold is exceeded. In the case of environmental media containing a listed hazardous waste, EPA would consider the contaminated media to no longer contain hazardous waste when the hazardous constituent(s) are below health-based levels.

2. Pit/Drum Material Type Code ("MTC") Comparison Lead

For purposes of preparation of its RCRA permit application Fernald documented its identification of containerized hazardous wastes on a "Materials Evaluation Form" (MEF). The MEFs were specifically designed to identify hazardous wastes as defined in 40 C.F.R. 260.10. FDF compared these forms (i.e., MEFs) with general descriptions of sources, materials and lot codes from production records. The comparisons did result in the location of partial historical records identifying materials by lot codes that went into the pits.

The lot code system tracked nuclear materials and comparisons with the MEFs did not produce reliable results.[6] There were only 3 matches found through comparison of these

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[5] A composite sample of eight drums of waste solvents was taken in 1977 and the analysis showed that there was a small amount of PCBs contained in the composite sample.

[6] Pit discard information was only available after 1953. Out of 53 matches between the old lot codes and the waste streams identified in the MEFs, there were only 3 matches that described technical processes that were "generally consistent" with each other.

records. Two of the matches involves wastes discussed in other parts of this letter. The third involves a comparison of sump sludge generated from two different periods of time in the vicinity of the dry cleaning equipment in the services building. Sludge in inventory and characterized using the MEF was compared to sludge believed to have been discarded to Pits 4 and 6. The inventoried sludge contained perchloroethylene (PCE) which was used in dry cleaning. There appears to be no direct documentation that sludges previously discarded to the pits contained PCE. Indeed, de minimis losses of hazardous constituents are permissible and the fact that a hazardous constituent may be present in a material does not make it a hazardous waste. The documentation on PCE is conjectural and inconclusive. For this reason, we can make the assumption, under EPA's guidance, that the source, contaminant or waste, if any, is not a listed hazardous waste.

3. Still Bottoms

FDF identified one container of still bottoms from the Detrex Still in its lot code comparison (item no. 2, above) and an old transfer form that indicated the container was sent to the Waste Pits in April 1980. A 1994 MEF identified still bottoms remaining in the Detrex Still in 1994 as listed hazardous waste. Standard operating procedure (NLCO-1021) discussed the proper disposition of Detrex Still bottoms which was not to discard them to the pits. The actual composition or origin of the containerized waste at the time of disposal remains uncertain.[7] Due to the uncertainties associated with this container and the unreliable nature of the lot code comparisons we are making the assumption under EPA's policy that the source, contaminant or waste, if any, is not a listed waste.

4. Incinerator/Burner Ash

Fourteen incinerators, burners or furnaces operated at Fernald between 1952 and 1986. There is uncertainty about the operating histories (e.g., specific volumes and constituents) for all of the burners. Three of them were eventually classified as hazardous waste management units: Oxidation Furnace No. 1, the Box Furnace and the Trane Incinerator. According to the summary report, Trane Incinerator Residues were not placed into the waste pits.

Some material from Oxidation Furnace No. 1 was placed into Pit 6 in the early 1980s. The constituent(s) in the materials, source(s) and disposal date(s) are inconclusive or unknown. This summary report does note, however, that the source code and material code for this material "was found to relate" to drummed waste inventories that were identified in 1991 as listed hazardous waste. Because of the uncertainties and

[7] Again, there are significant uncertainties associated with comparing a 14 year old production lot code to the MEF used for RCRA determinations. The composition of materials varied within a single lot code. Lot codes tracked uranium content and were not used to track chemical constituents. The MEF was developed because lot codes were unreliable. They could not be used with any reasonable degree of certainty in determining the processes, sources or chemical constituents of containerized materials for purposes of identifying solid and hazardous wastes under RCRA.

inconclusive nature of the information on this material we can assume in accordance with EPA's policy that this material was not a listed hazardous waste.

Some documents indicated that 3 drums of material from the Box Furnace may have been disposed of in Pits 4 and 6. The Box Furnace had been used to burn solvent-contaminated materials such as rags. The summary report notes that interviews with employees indicated that there was uncertainty as to what "solvents" were burned in this unit. And there were no documents that directly identified the constituents of the 3 drums or their sources. Because of the uncertainties and inconclusive nature of the information on the 3 drums, we can assume in accordance with EPA's policy that this material was not a listed hazardous waste.

The summary report discusses other documents and one interview indicating that solvents, oil, oil-sludge and "excess laboratory and other chemicals were evaporated and/or burned" in the sewage treatment plant and the resultant ashes were disposed of into the waste pits. There does not appear to be any documentation that would identify source(s), date(s), process(es), and constituent(s) upon which to base a hazardous waste determination with any reasonable degree of certainty. Indeed, the summary report itself notes that, "[I]t is inconclusive whether specific ashes and cinders from any specific burning campaign actually contained listed waste, or were derived from a listed waste." See, Summary Report, page 30.

The summary report also mentions the mixing and burning of spent chlorinated solvents and used oil at the oil burner between 1962 and 1979. There is one document indicating that one drum of ash from the oil burner may have been discarded into pit in 1979. But there is no documentation that the drummed ash actually contained a listed hazardous waste. There were several other similar "findings" in the summary report with respect to burners that were operated at the site. The information in each instance was so inconclusive that it could not be determined whether any specific material mentioned in connection with these burners actually contained listed hazardous waste, or were derived from a listed hazardous waste.

5. Excess/Laboratory Chemicals

A handwritten notation on a 1978 Property Disposal Request apparently triggered reexamination of past disposal practices in this area. The notation and request indicate that 22 pounds of potentially P or U-listed hazardous waste were disposed of in Pit 4. However, the notation and request are not disposal records, and the majority of site documentation shows that laboratory chemicals were shipped off-site for disposal or re-use. EPA was advised of the information indicating that laboratory chemicals may have been disposed of into the waste pits and the OU1 ROD requires segregation of containerized materials that may be encountered. Because of the uncertainties associated with the disposition of small quantities of laboratory chemicals (e.g., some may fall outside the basis for the listing, some may have been placed in the burn pit, etc.), we can assume in accordance with EPA's policy that this material was not disposed of in the Waste Pits.

6. Solvent Disposal

The summary report indicates that reexamination of solvent disposal information "already recognized in remedial investigation" regarding possible placement or burning of solvents in the burn pit "uncovered" no new information.

7. Barium Chloride

FDF identified that some barium chloride residues from Reactive Metals Incorporated (RMI) may have been placed in Pit 6. The background documents provided with the summary report did not identify specific dates. The documents also indicate that NLO did not recommend placement of barium chloride into Pit 6 because it exhibited the toxicity characteristic under EPA's regulations. The summary report information is inconclusive. In any event, OU1 analytical data has not shown barium chloride concentrations in excess of EPA's toxicity characteristic limits. If these residues went into Pit 6 they do not appear to exhibit the toxicity characteristic for barium based upon the pit sampling data.

CONCLUSION

The summary report and background information contain mostly documents and data that were reviewed in preparation of the RCRA permit application, the RI/FS and the ROD. The summary report is a reexamination of much of that information; the information is conjectural and inconclusive. The summary information and analysis presented do not support revision of Fernald's hazardous waste determinations[8] or reconsideration of the remedial actions.

The summary report information does not warrant meaningful revision the regulatory requirements for disposal of remediation wastes off-site. The selected remedial actions account for most of the uncertainties associated with past disposal practices (e.g., nonconforming materials will be segregated, identified and managed in accordance with applicable requirements). As a precautionary measure, however, we are requesting that FDF prepare a contingency plan to isolate and manage any solvent-contaminated media that may be located in the burn pit area due to probable disposal of the NEC solvents in 1976 and 1977.

[8] Indeed, it appears that Fernald's hazardous waste determinations were overly conservative in some cases and that some units which were identified as HWMUs were not in fact HWMUs.

If you have any questions, please contact Mr. Dave Lojek at (513) 648-3127.

Sincerely,

Jack R. Craig
Director

OH:Osheim